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FEE TRANSMITTAL for FY 2005

Effective 10/01/2004. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 340

Complete If Known	
Application Number	09/652,153
Filing Date	August 31, 2000
First Named Inventor	Peretz Moshes FEDER et al.
Examiner Name	Dustin Nguyen
Art Unit	2154
Attorney Docket No.	29250-000434/US

METHOD OF PAYMENT *(check all that apply)*

☒ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☐ Deposit Account:

Deposit Account Number: 08-0750

Deposit Account Name: Harness, Dickey & Pierce, P.L.C.

The Director is authorized to: *(check all that apply)*
☐ Charge fee(s) indicated below ☒ Credit any overpayments
☒ Charge any additional fee(s) during the pendency of this application
☐ Charge fee(s) indicated below, **except for the filing fee** to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1001	790	2001	395	Utility filing fee	
1002	350	2002	175	Design filing fee	
1003	550	2003	275	Plant filing fee	
1004	790	2004	395	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1) ($) 0

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

			Extra Claims		Fee from below		Fee Paid
Total Claims		-20 **	0	X		=	0
Independent Claims		-3 **	0	X		=	0
Multiple Dependent						=	0

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	88	2201	44	Independent claims in excess of 3
1203	300	2203	150	Multiple dependent claim, if not paid
1204	88	2204	44	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 0

***or number previously paid, if greater; For Reissues, see above*

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet.	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	430	2252	215	Extension for reply within second month	
1253	980	2253	490	Extension for reply within third month	
1254	1,530	2254	765	Extension for reply within fourth month	
1255	2,080	2255	1,040	Extension for reply within fifth month	
1401	340	2401	170	Notice of Appeal	
1402	340	2402	170	Filing a brief in support of an appeal	340
1403	300	2403	150	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive – unavoidable	
1453	1,370	2453	685	Petition to revive – unintentional	
1501	1,370	2501	685	Utility issue fee (or reissue)	
1502	490	2502	245	Design issue fee	
1503	660	2503	330	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17 (q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	790	2809	395	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	790	2810	395	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	790	2801	395	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	
				Other fee (specify) ____	

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) ($) 340

SUBMITTED BY				Complete *(if applicable)*	
Name (Print/Type)	Ray Heflin	*Registration No. (Attorney/Agent)*	41,060	*Telephone*	703-668-8000
Signature				*Date*	November 29, 2004

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HDP/SB/21 based on PTO/SB/21 (08-00)

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

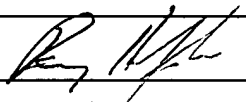
Application Number	09/652,153
Filing Date	August 31, 2000
Inventor(s)	Peretz Moshes FEDER et al.
Group Art Unit	2154
Examiner Name	Dustin Nguyen
Attorney Docket Number	29250-000434/US

ENCLOSURES *(check all that apply)*

- ☒ Fee Transmittal Form
  - ☒ Fee Attached
- ☐ Amendment
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Response to Missing Parts/ Incomplete Application
- ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Assignment Papers *(for an Application)*
- ☐ Letter to the Official Draftsperson and _____ Sheets of Formal Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s) _____
- ☐ After Allowance Communication to Group
- ☒ LETTER SUBMITTING APPEAL BRIEF AND APPEAL BRIEF (w/clean version of pending claims)
- ☐ Appeal Communication to Group *(Notice of Appeal, Brief, Reply Brief)*
- ☐ Proprietary Information
- ☐ Status Letter
- ☐ Other Enclosure(s) *(please identify below)*:

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm *or* Individual name	Harness, Dickey & Pierce, P.L.C.	Attorney Name Ray Heflin	Reg. No. 41,060
Signature			
Date	November 29, 2004		

IN THE U.S. PATENT AND TRADEMARK OFFICE

Appellants:	Peretz Moshes FEDER et al.
Application No.:	09/652,153
Art Unit:	2154
Filed:	August 31, 2000
Examiner:	Dustin Nguyen
For:	A METHOD FOR TRANSMITTING DATA OVER A NETWORK MEDIUM
Attorney Docket No.:	29250-000434/US

APPELLANTS' BRIEF ON APPEAL UNDER 37 C.F.R. §41.37

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

November 29, 2004

Sir:

In accordance with the provisions of 37 C.F.R. §41.37, Appellants submit the following:

I. REAL PARTY IN INTEREST:

The real party in interest in this appeal is Lucent Technologies Inc. Assignment of the application was submitted to the U.S. Patent and Trademark Office on April 12, 2001, and recorded on the same date at Reel 011717, Frame 0638.

11/30/2004 HTECKLU1 00000099 09652153
01 FC:1402 340.00 OP

II. RELATED APPEALS AND INTERFERENCES:

There are no known appeals or interferences that will affect, be directly affected by, or have a bearing on the Board's decision in this Appeal.

III. STATUS OF CLAIMS:

Claims 1-24 are pending in the application, with claims 1, 7, and 18 being written in independent form.

Claims 5, 6, 15-17, and 21-23 would be allowed if they were rewritten independent form.

Claims 1, 4, 7, 8, 12-14, and 18-20 remain finally rejected under 35 U.S.C. 103(a) as being obvious over U.S. 6,285,662 to Watanabe et al. ("Watanabe") in view of U.S. 6,614,799 to Gummalla et al. ("Gummalla"); and claims 2, 3, 9-11, and 24 remain finally rejected under 35 U.S.C. 103(a) as being obvious over Watanabe in view of Gummalla, and further in view of U.S. 6,172,983 to Shaffer et al. ("Shaffer"). Thus, of the pending claims, only claims 1-4, 7-14, 18-20, and 24 are on appeal, and these claims are set forth in the attached Claims Appendix.

IV. STATUS OF AMENDMENTS:

Appellants submitted an after final Amendment on July 28, 2004, requesting that new claims 25 and 26 be added to the application. The Examiner refused entry of the new claims via the September 16, 2004 Advisory Action. Thus, new claims 25 and 26 are not shown in the attached Claims Appendix.

V. SUMMARY OF CLAIMED SUBJECT MATTER:

Independent claims 1, 7, and 18 are written in a method format. All three claims are directed to transmitting data over a medium according to a

back-off delay window technique intended to reduce the probability of transmission collisions.[1] The back-off delay window indicates values of possible delay periods. One of the values from the back-off delay window is randomly selected, and data transmission is attempted after the selected value (or delay period) has expired.[2] As will be discussed in more detail below, the back-off delay window (and thus the number of possible delay periods) may change depending on whether the previous data transmission attempt was successful or resulted in a collision.

Features of the claimed invention will be appreciated with reference to Fig. 2. In Fig. 2, i = a state index representing the total number of times a data transmission was unsuccessful, and W(i) = the back off window for a given state index.[3]

A. Claims 1 and 7:

Consider the logic loop defined by steps 24-28 and 33-36. Assume that a data packet has been transmitted unsuccessfully five times. At this point (step 24), (i) = 5 and the back-off delay window W(5) = 8, as shown for example in Table 1.[4] If the data packet again experiences a collision (step 28), then a new back-off delay window W(6) is obtained (steps 33, 34, and 36). As shown in Table 1, and by way of example only, the new back-off delay window W(6) = 8. That is, the new back-off delay window W(6) is less than two times the previous back-off delay window W(5), as recited in independent claim 1. In fact, in this scenario, the new back-off delay window W(6) is equal to a preceding ... back-off delay window W(5), as recited in independent 7. In this way, a series of unsuccessful transmissions do not cause the back-off delay window to grow exponentially (as is the case with conventional techniques).

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[1] Spec., p. 1, l. 3-5.
[2] Spec., p. 8, l. 12 – p. 9, 2.
[3] Spec., p. 7, l. 19 – p. 8, l. 4.
[4] Spec., p. 10.

B. Claim 18:

Consider the logic loop defined by steps 24-28 and 29-32. Continuing with the hypothetical scenario discussed above, assume that the sixth transmission of the data packet is successful (step 28). Here, the state index value (i) is decreased by 2 (step 29), for example, from 6 to 4. The back-off delay window W(4) is then calculated (steps 30-32). As shown in Table 1, the back-off delay window W(4) = 4. Thus, the new back-off delay window W(4) of 4 is greater than a smallest back-off delay window W(1) of 2, as recited in independent claim 18.

VI. Grounds of Rejection to be Reviewed on Appeal:

Appellants seek the Board's review of the rejection of claims 1, 7, and 18 under 35 U.S.C. 103(a) as being obvious over U.S. 6,285,662 to Watanabe et al. ("Watanabe") in view of U.S. 6,614,799 to Gummalla et al. ("Gummalla").

VII. ARGUMENTS:

A. The Obviousness Rejection Based on Watanabe and Gummalla:

i. Independent Claim 1:

Independent claim 1 defines a method that involve (among other things) obtaining a back-off delay window that is "less than two times a preceding back-off delay window." At least this feature (as recited in claim 1), in combination with the other features defined by claim 1, is not taught or suggested by the prior art relied upon by the Examiner.

The Examiner recognizes that the primary reference to Watanabe is not pertinent to obtaining a back-off delay window that is less than two times a preceding back-off delay window, and therefore looks to Gummalla to allegedly teach this feature. This rejection position should be reversed for the following reasons.

The Gummalla reference does not teach the features upon which the Examiner relies to the reject the claim. This is because Gummalla's straightforward disclosure indicates that the back-off window is controlled via an "exponential" back-off algorithm, in which the back-off window parameters are expressed as "a power of two."[5] According to this algorithm, the exponent value is incremented by one each time a collision is detected.[6] Thus, each detected collision necessarily causes the size of the back-off window to double. Certainly then, Gummalla does not teach or suggest obtaining a back-off delay window that is "less than two times a preceding back-off delay window," as required by claim 1. The Examiner's assertions to the contrary are tenable only by placing a strained interpretation on the reference.

Turning to the next point, the Examiner cites portions of Gummalla (i.e., col. 11, lines 21-37; and col. 18, lines 18-23) as allegedly teaching that the obtained back-off delay window "is less than two times a preceding back-off delay window," as recited in claim 1.[7] Appellants disagree. Each portion of Gummalla cited by the Examiner is discussed separately below.

Col. 11, lines 21-37 of Gummalla indicate:

> *Each cable modem in the network uses the back-off parameters to determine a range of possible back-off values. For example, in MCNS protocol the cable modems use a truncated binary* ***exponential back-off algorithm*** *to determine the number of contention minislots to defer before retrying. The CMTS specifies the window of values ([back-off_start, back-off_end]) to be used by the cable modems to decide how many contention minislots to defer.* ***The size of the window is controlled by the current back-off exponent (specified as a power of 2) at the cable modem.*** *For example, if*

[5] Gummalla, col. 6, l. 56-64.
[6] Gummalla, col. 11, l. 39-43.
[7] April 28, 2004 Office Action, numbered paragraph 5.

> *the current value of the back-off exponent at a particular cable modem is 3, the modem will choose a random number from the values within the range [0, 2^3 -1], which translates to the range [0, 1, 2, ... 7]. Once a random number has been selected from this range (the random number being the back-off value), the modem will attempt to retransmit to CMTS after it has deferred a number of contention slots equal to the selected random number.* (emphasis added).

As described above, the size of the window is specified as a power of 2. In the given example, the exponent is 3. Thus, a first window includes a total of 8 numbers (i.e., [0, 1, 2, ..., 7]). If another collision is detected, the exponent is increased by 1.[8] Here, a second window would include a total of 16 numbers (i.e., [0, 1, 2, ..., 15]). The second window has twice as many numbers as the first window. Certainly then, Gummalla does not teach or suggest obtaining a back-off delay window that "is less than two times a preceding back-off delay window," as recited in claim 1.

The Examiner's comments seem to intimate a belief that the randomly selected back-off value is pertinent to claim 1. However, the randomly selected back-off value is a single value that is chosen from the window of values. That is, the chosen number merely indicates the number of contention slots (or time slots) that the modem will defer before retransmitting the data packet. The chosen number is not, however, pertinent to the size of the window (i.e., the number of possible values that may be selected). In short, the randomly selected back-off value does not control the size of the window, as alleged by the Examiner.

Col. 18, lines 21-37 of Gummalla indicate:

> *Thus, if the value of the expression BS+2 is less than 15, the back-off end parameter will be set equal to BS+2 in step 512. However, if the value of*

[8] Gummalla, col. 11, lines 39-43.

> *the expression BS+2 is greater than 15, the back-off end parameter will be set equal to 15 in step 512. It is to be noted, that other maximum values for the back-off end parameter may be used where appropriate.*

This portion of the disclosure relates to a technique in which back-off parameters (i.e., back-off start value "BS" and back-off end value "BE") may be adjusted to obtain a desired ratio of the number of collisions (Nc) to the number of successful transmissions (Ns). BS and BE represent the range of exponent values to be used by the modem to determine the window size.[9] For example, if BS = 3 and BE =8, the modem will determine the first window size as 2^{BS} (or 2^3); i.e., the window of values would include 0, 1, 2, ... , 7. If a collision occurs, then the modem will determine the second window size as 2^{BS+1} (or 2^4). If another collision occurs, then the modem will determine the third window size as 2^{BS+2} (or 2^5), and so on. However, this disclosure does not somehow detract from the straightforward disclosure indicating that the window is specified as a power of 2, and that the exponent is increased by 1 when a collision is detected. That is, for a given set of back-off parameters BS, BE, each detected collision experienced by a transmitted packet necessarily causes the size of the back-off delay window to double.

For at least these reasons, Gummalla does not teach or suggest the "back-off delay window" feature defined by claim 1. Consequently, even if combined in the manner suggested by the Examiner, the prior art would still not meet each and every feature of the claimed invention.

ii. Independent Claim 7:

Independent claim 7 defines a method that involve (among other things) obtaining a back-off delay window that is "equal to a preceding or future back-off delay window." The Examiner recognizes that the primary

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[9] Gummalla, col. 11, lines 4-22.

reference to Watanabe is not pertinent, and therefore looks to the secondary reference of Gummalla to allegedly teach this feature. As demonstrated above, however, Gummalla teaches an exponential back-off algorithm, in which the back-off window parameters are expressed as a power of two. Thus, each detected collision necessarily causes the size of the back-off window to double. Certainly then, Gummalla does not teach or suggest the "back-off delay window" feature defined by claim 7.

Turning to the next point, the Examiner cites portions of Gummalla (i.e., col. 14, lines 10-25; and col. 17, lines 23-35) as allegedly teaching that the obtained back-off delay window "is equal to a preceding or future back-off delay window," as recited in claim 7.[10] Appellants disagree. Each portion of Gummalla cited by the Examiner is discussed separately below.

Col. 14, lines 10-25 of Gummalla indicate:

> *Thus, from the above equations, when* ***theoretically ideal back-off values*** *have been chosen by each cable, modem contending for upstream access to the CMTS (e.g., a back-off value equal 1/500 for 500 contenders), the ratio of Nc/Ns will approach the value 0.718. Therefore, as the back-off value selected by each cable modem in the network contending for upstream access (to the CMTS) approaches its* ***theoretically optimal value****, the ratio of Nc/Ns should start approaching the value 0.7, approximately. If the selected back-off values are not correct, than the resulting ratio of Nc/Ns would diverge from the value 0.718. The present inventive technique for dynamically adjusting modem back-off parameters utilizes this* ***concept*** *to correspondingly correct the back-off parameters, depending upon the value of the Nc/Ns ratio, so as to cause this ratio to converge to the desired ratio of Nc/Ns equal to approximately 0.7.* (emphasis added).

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[10] April 28, 2004 Office Action, numbered paragraph 7.

This disclosure relates to a theory for maximizing throughput in a cable modem system. It does not, however, teach or suggest any specific details of a practical embodiment. At least in this regard, the Examiner's reliance upon Gummalla is misplaced.

Furthermore, the theory is directed to adjusting the back-off parameters BS and BE. However, it does not somehow detract from the straightforward disclosure indicating that the window is specified as a power of 2, and that the exponent is increased by 1 when a collision is detected. That is, for a given set of back-off parameters BS, BE, each detected collision experienced by a transmitted packet necessarily causes the size of the back-off delay window to double. Certainly then, the cited portion of Gummalla is not pertinent to obtaining a back-off delay window that "is equal to a preceding or future back-off delay window," as recited in claim 7.

Col. 17, lines 23-35 of Gummalla indicate:

> *It is to be understood, however, that other maximum values may be used where appropriate. For example, a smaller maximum value for the back-off start parameter may be appropriate in cable modem networks having relatively few cable modems. On the other hand, larger maximum values for these back-off start parameter may be appropriate, for example, in networks where the CMTS services millions of cable modems. The function MIN(BS+1, 15) chooses the smaller value of either the value 15 or the value resulting from the expression BS+1. Thus, if the value of the expression BS+1 is greater than 15, the back-off start value will be set equal to 15. If, however, the value of the expression BS+1 is less than 15, the back-off start value will be set equal to the value of BS+1.*

This portion of the disclosure relates to a technique in which the back-off parameters BS and BE may be adjusted. However, it does not

somehow detract from the straightforward disclosure indicating that the window is specified as a power of 2, and that the exponent is increased by 1 when a collision is detected. That is, for a given set of back-off parameters BS, BE, each detected collision experienced by a transmitted packet necessarily causes the size of the back-off delay window to double.

iii. Independent Claim 18:

Independent claim 18 defines a method that involve (among other things) obtaining a back-off delay window (for transmitting a next data packet) that is "greater than a smallest back-off delay window." The Examiner recognizes that the primary reference to Watanabe is not pertinent, and therefore looks to the secondary reference of Gummalla to allegedly teach this feature. This rejection position should be reversed for the following reasons.

The Gummalla reference does not teach the features upon which the Examiner relies to the reject the claim. Gummalla indicates that the back-off start BS value (for a transmission) may be increased or decreased. However, the increase or decrease is based on an evaluation of the total number of collisions and successful transmission on a particular channel. Indeed, if the total number of collisions and successful transmission on a particular channel remain the same from one transmission to the next, then the back-off start BS value would remain the same. This is in contrast to claim 18 in which the decrease in the block-off delay window occurs when a data packet has been transmitted without contention.

Turning to the next point, the Examiner cites a portion of Gummalla (col. 20, lines 1-22) as allegedly teaching that the obtained back-off delay window is "greater than a smallest back-off delay window," as recited in

claim 18.[11] Appellants disagree. The portion of Gummalla cited by the Examiner is discussed below.

Col. 20, lines 1-22 of Gummalla indicate:

> *If, however, the ratio of ΔNc/ΔNs is greater than one, as shown in region C of FIG. 5, then the value of the back-off parameters BS and BE, are increased by respective constant values.*
>
> *FIG. 6 shows an alternate embodiment of the present invention wherein the adjustment to the back-off parameter values is proportionately related to the ratio of ΔNc/ΔNs value. As described above in reference to FIG. 4 and as shown in FIG. 5, the back-off parameter values are either incremented or decremented by a constant value or values when the ratio of ΔNc/ΔNs falls outside of the range [0.25, 1]. Thus, as shown in FIG. 5, where the ratio of ΔNc/ΔNs is less than 0.25, the value of the of the back-off start parameter is decreased by a constant value as shown in region A of FIG. 5. However, as shown in region A of FIG. 6, as the ratio of ΔNc/ΔNs decreases below the value 0.25, the amount of adjustment made to the back-off start parameter increases (in a negative direction). Similarly, as shown in region C of FIG. 6 as the ratio of ΔNc/ΔNs increases past 1.0, the amount of adjustment to the back-off start parameter is proportionately increased. The techniques shown in FIG. 6 has the advantage of increased sensitivity in the dynamic response and adjustment of the modem back-off parameters.*

Appellants recognize that Gummalla indicates that the back-off start value BS (for a transmission) may be increased or decreased. However, the increase or decrease is based on an evaluation of the total number of collisions Nc and successful transmissions Ns on a particular channel. Indeed, if the total number of collisions and successful transmissions on a

[11] April 28, 2004 Office Action, numbered paragraph 9.

particular channel remain the same from one transmission to the next, then the back-off start BS value would remain the same. This is in contrast to claim 18 in which the decrease in the block-off delay window occurs when a data packet has been transmitted without contention.

Consider the following example. If BS = 3 and BE =8, Gummalla's modem will determine the first (smallest) window size as 2^{BS} (or 2^3); i.e., the window of values would include 0, 1, 2, ... , 7. If a collision occurs, then the modem will determine the second window size as 2^{BS+1} (or 2^4). If the data packet is successfully transmitted (i.e., without contention), then the back-off delay window for the next data packet transmission would again be determined to have a size of 2^{BS} (or 2^3). Certainly then, Gummalla is not pertinent to obtaining a back-off delay window that is "greater than a smallest back-off delay window," as recited in claim 18.

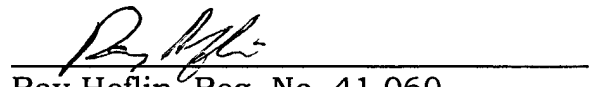
iv. Conclusion:

In conclusion, the secondary reference to Gummalla teaches a technique for adjusting the back-off start BS and back-off end BE parameters of an algorithm in which, for a given data packet, the size of the back-off window doubles when a collision is detected. The reference does not, however, teach or suggest obtaining a back-off delay window for retransmitting a data packet that is "less than two times a preceding back-off delay window," as recited in claim 1, or "equal to a preceding or future back-off delay window," as recited in claim 7. Also, the reference does not teach or suggest obtaining a back-off delay window for transmitting a next data packet that is "greater than a smallest back-off delay window," as recited in claim 18. Consequently, even if combined in the manner suggested by the Examiner, the prior art would not meet each and every feature of claimed invention. Accordingly, Appellants respectfully request the Board to reverse the Examiner's rejections of claims 1-4, 7-14, 18-20, and 24.

The Commissioner is authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKEY, & PIERCE, P.L.C.

By: 

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GDY/HRH:ewd

CLAIMS APPENDIX

Claims 1-4, 7-14, 18-20, and 24 on Appeal:

1. A method of transmitting data over a medium, the method comprising the step of:

obtaining a back-off delay window for retransmitting a data packet, the back-off delay window obtained being based upon a number of unsuccessful transmissions of the data packet or a predetermined initialized value, and wherein the obtained back-off delay window is less than two times a preceding back-off delay window.

2. The method according to claim 1, wherein the obtained back-off delay window is found using a lookup table.

3. The method according to claim 2, wherein the lookup table comprises predetermined back-off delay window values determinable based upon a number times a given data packet is unsuccessfully transmitted.

4. The method according to claim 1, wherein the obtained back-off delay is determined using a formula.

7. A method of transmitting data over a medium, the method comprising the step of:

obtaining a back-off delay window for retransmitting an unsuccessfully transmitted data packet, the back-off delay window being obtained based upon a number of unsuccessful transmissions of the data packet or a predetermined initialized value, and wherein the obtained back-off delay window is equal to a preceding or future back-off delay window.

8. The method according to claim 7, wherein the preceding back-off delay window is a back-off delay window which occurred immediately prior to the obtained back-off delay window.

9. The method according to claim 7, wherein the future back-off delay window is a back-off delay window which occurs immediately following the obtained back-off delay window.

10. The method according to claim 7, wherein the obtained back-off delay window is found using a lookup table.

11. The method according to claim 10, wherein the lookup table comprises predetermined back-off delay window values of determinable based upon a number of times a given data packet is unsuccessfully transmitted.

12. The method according to claim 7, wherein the obtained back-off delay is determined using a formula.

13. The method according to claim 12, wherein the formula for determining the obtained back-off delay contains a function for converting a non-integer value to an integer value.

14. The method according to claim 13, wherein the function coverts the non-integer value to a smallest integer value which is greater than the non-integer value.

18. A method of transmitting data over a medium, comprising the steps of:

transmitting a data packet without contention; and

decreasing a back-off delay window for transmitting a next data packet, the decreased back-off delay window resulting in an obtained back-off delay window being greater than a smallest back-off delay window, and wherein the decrease in the back-off delay window is based upon a variable integer value or a predetermined value.

19. The method according to claim 18, wherein if the obtained back-off delay window is less than a predetermined minimum back-off window, the obtained back-off delay window is set equal to a predetermined minimum back-off window.

20. The method according to claim 18, wherein the obtained back-off delay window is found by subtracting two from a variable value corresponding a number of unsuccessful transmissions of a previously transmitted data packet, the resulting difference is then applied to a formula to generate the obtained back-off delay window.

24. The method according to claim 18, wherein the obtained back-off delay window is found by subtracting two from a variable integer value corresponding the number of unsuccessful transmissions of a previously transmitted data packet, the resulting difference is then applied to a lookup table containing back-off delay window values to thereby reference a corresponding back-off delay window.